CA3 ONHW Q90
82 U6502 V.12

Pamphlet box

URBAN/MUNICIPAL

MANN TESTING LABORATORIES REPORTS

Reference 29

CA3 ONHW Q90
82 U6502 V.12

MANN TESTING LABORATORIES LTD.
5550 McADAM ROAD, MISSISSAUGA, ONTARIO L4Z 1P1
PHONE: 890-2555 • TELEX: 06-960496

November 1, 1985

Reference 29

Ms. Anne Koven
c/o Upper Ottawa Landfill Site Office
20 Jackson Street
Suite 412
Hamilton, Ontario
L8P 1L2

URBAN MUNICIPAL
APR 30 1987
GOVERNMENT DOCUMENTS

Re: Mann Testing File #853182
Analysis of Outgassing from Test Probes
Bore Hole & Test Well - GC/MS, GC/FID/TC

Dear Anne:

Samples collected from the Upper Ottawa Landfill Site, October 22, 1985 included passive sampling at the Bore Hole, Experimental Test Well and the most active of the test probes. Gooseneck #14 and test probe 6A were relatively inactive and necessitated pumping to obtain a suitable sample volume.

Pre-fitted caps, having a 3/4" drilled opening, were used to reduce the outgassing diameter of the vent being sampled. In this manner, the deadspace and possible dilution of the outgas with ambient air were reduced, if not eliminated. After 5 to 10 minutes, a rubber stopper through which a 4' x 1/4" copper pipe had been inserted, was used to seal the vent opening and allow passive gas sample collection from deep within the probes, bore hole and test well.

The bag samples thus collected were analysed for the presence and amount of those compounds identified in the target list, by utilizing gas chromatography for the major components and GC/MS for the trace chemical substances.

Members: Association of Official Racing Chemists, American Chemical Society, Canadian Society of Forensic Science, Chemical Institute of Canada, American Society for Testing and Materials, Canadian Federation of Independent Business, Better Business Bureau, Association of the Chemical Profession of Ontario, Association of Professional Engineers of the Province of Ontario, Canadian Association of Fire Chiefs, American Industrial Hygiene Association, Air Pollution Control Association, Canadian Society of Safety Engineering, International Society for Respiratory Protection

Tables 1 and 2 show the analytical results obtained by GC and GC/MS respectively. The labelled GC/MS chromatograms are also included to show the non-target compounds that were detected, i.e. n-Hexane, Tetrahydrofuran, Acetone and Freon 12.

The Bore Hole produced a very strong and offensive odour when the cap was removed and the presence of water in the pipe resulted in a strong but intermittent release of generated gases. The analysis of this sample showed the presence of a large variety of saturated hydrocarbons, but only a few other compounds (Table 2).

Major components listed in Table 1 shouuld be considered as nominal values only, except for Oxygen which was analysed separately using a Taylor Paramagnetic Oxygen Analyser. The Passive Test Well sample was selected randomly for additional analysis by Gastec colormetric tubes and revealed the presence of Hydrogen >2% and Hydrogen Sulfide at 47 parts per million. Arsine and Sulfur Dioxide were also looked for but were not detected.

If you have any questions, I would be pleased to hear from you.

Yours truly,

MANN TESTING LABORATORIES LTD.

W.R. Burgess

W.R. Burgess, B.Sc.,C.Chem.
Manager, Occupational Health

WRB/jh,
Encl.

Table 1

Compound	Site1 Pumped Test Well	Site1 Passive Test Well	Site13 Passive Bore Hole	Site2 Passive Probe #1	Site4 Passive Probe #3a	deep Site5 Passive Probe #3b	not reported Passive Probe #4	shallow reported Passive Probe #6a	Site 7 Pumped Gooseneck#14
Methane % nominal	58.1	59.4	59.9	50.1	43.7	54.6	34.4	38.4	42.1
Carbon Dioxide % nominal	27.4	27.0	26.2	26.3	21.0	24.5	15.9	18.9	22.1
Oxygen % nominal	0.0	0.0	0.1	0.6	1.5	0.4	NT	NT	3.5
Nitrogen % nominal	4.0	4.1	5.1	13.5	13.5	7.1	NT	NT	19.6
Total Hydrocarbon in ppm Methane Equivalents	2170	1180	336	406	452	901	256	643	348
Total % nominal	89.5	90.5	91.3	90.5	85.7	86.6	50.3	57.3	87.3

NT - Not Tested due to insufficient sample
% nominal - % ± 3% (for major compounds)

Table 2

Compound	Site 1 Pumped Test Well ppb	Site 1 Passive Test well ppb	Site 13 Passive Bore Hole ppb	Site 2 Passive Probe #1 ppb	Site 4 Passive Probe #3a ppb	Site 5 deep Passive Probe #3b ppb	Site 6 Passive Probe #4 ppb	Site 12 Passive Probe #5a ppb	Site 7 Pumped Gooseneck#14 ppb	MDL ppb
Dichloromethane	310	ND	93	1009	481	416	655	400	655	60
Diethylether	ND	ND	ND	1774	2727	ND	2984	1745	161	70
Acetone	ND	ND	ND	508	413	1507	1858	1591	35095	70
1,2-Dichloroethene	4191	4567	ND	1525	ND	ND	ND	ND	ND	60
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	231	60
Chloroform	ND	ND	ND	SAT	ND	ND	ND	ND	ND	50
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	60
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Benzene	3494	2962	205	885	1592	1237	470	2658	618	60
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	BMDL	50
Toluene	39227	37826	314	15866	11558	33238	3406	ND	1810	50
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Ethylbenzene	11103	7815	BMDL	2338	5357	5193	1936	4942	458	60
m & p-Xylene	24346	18587	BMDL	6130	12449	11000	4811	9914	1522	60
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
o-Xylene	11500	8014	BMDL	2173	3020	3623	926	BMDL	379	60
Benzaldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
C3 Benzenes	1480	1287	ND	514	503	582	218	136	ND	50
Dichlorobenzene	ND	ND	ND	ND	ND	BMDL	ND	ND	ND	60
C4 Benzenes	1107	1936	ND	ND	354	162	ND	ND	ND	50
Naphthalene	72	174	ND	BMDL	BMDL	BMDL	ND	ND	ND	60

THF

MDL - Method Detection Limit for Reliable Quantitation
BMDL - Detected Below MDL
ND - None Detected
SAT - Saturated but No Standard Available

RIC
100.0
200
3:20
400
6:40
600
10:00
800
13:20
1000
16:40
1200
20:00
1400
23.20
SCAN TIME
SAT. HYDROCARBON
521
HEXANE
THF
BENZENE
SAT. HYDROCARBON
SAT. HYDROCARBON
695
SAT. HYDROCARBON
TOLUENE
SAT. HYDROCARBON
820
SAT. HYDROCARBON
ETHYL BENZENE
912
m+p- XYLENE
O- XYLENE
SAT. HYDROCARBON
1028
C3 BENZENE
C4 BENZENE
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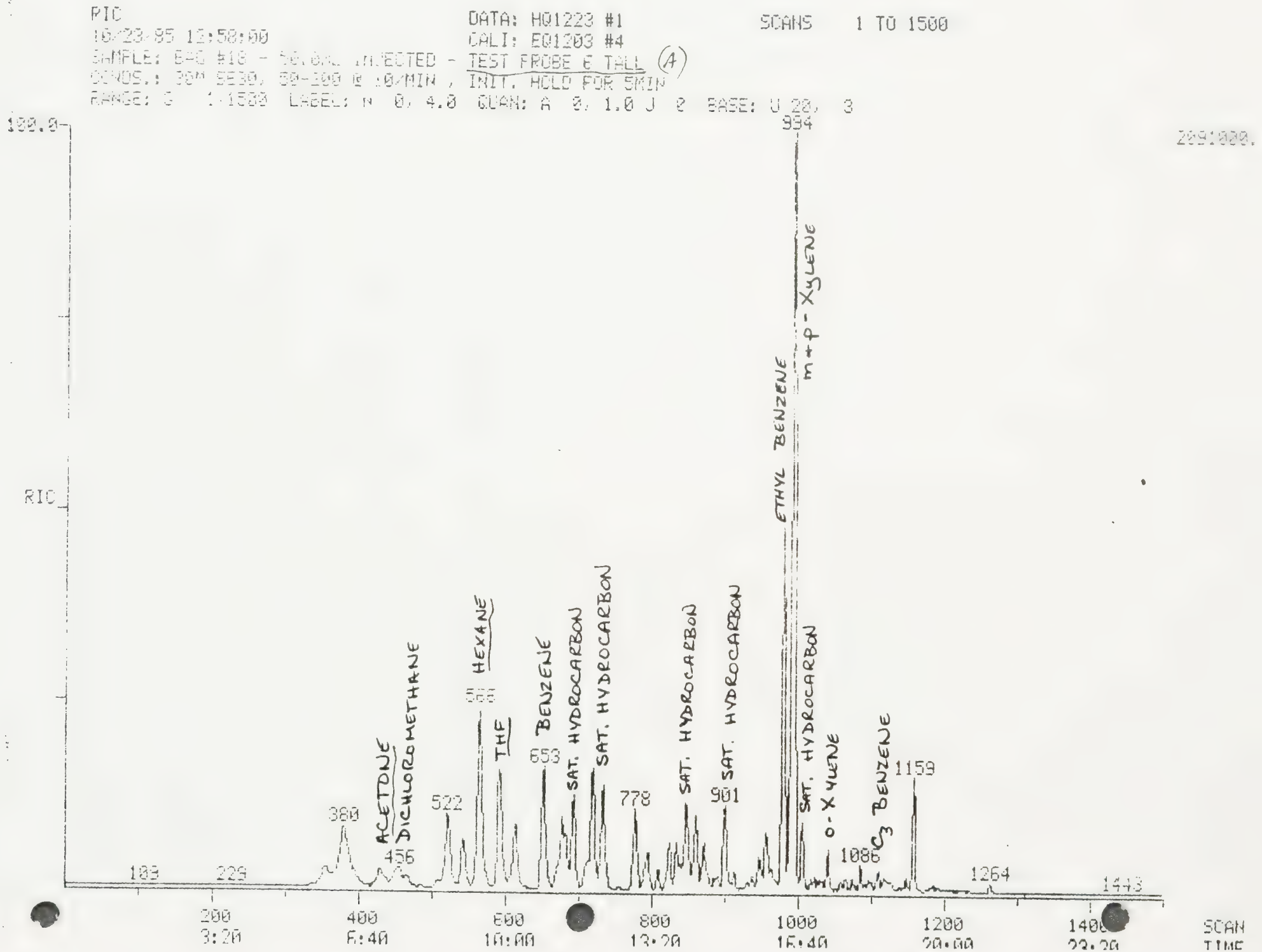
CAL: EQ1203 #4
TEST PROBE 3 SHORT (B)
INIT. HELD FOR 5MIN
SCANS 1 TO 1500
3440530.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10/23-85 12:50:00
SAMPLE: E40 #10 - 50.0AL INJECTED - TEST PROBE 6 TALL (A)
OCNOS.: 30M SE30, 80-100 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: G 1-1500 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
DATA: H01223 #1
CALI: E01203 #4
SCANS 1 TO 1500
100.0
RIC
2691000.
994
ETHYL BENZENE
m+p-Xylene
ACETONE
DICHLOROMETHANE
HEXANE
THF
BENZENE
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
o-Xylene
C3 BENZENE
380
456
522
653
778
901
1086
1159
1264
1443
183
229
200
3:20
400
6:40
600
10:00
800
13:20
1000
16:40
1200
20:00
1400
23:20
SCAN
TIME

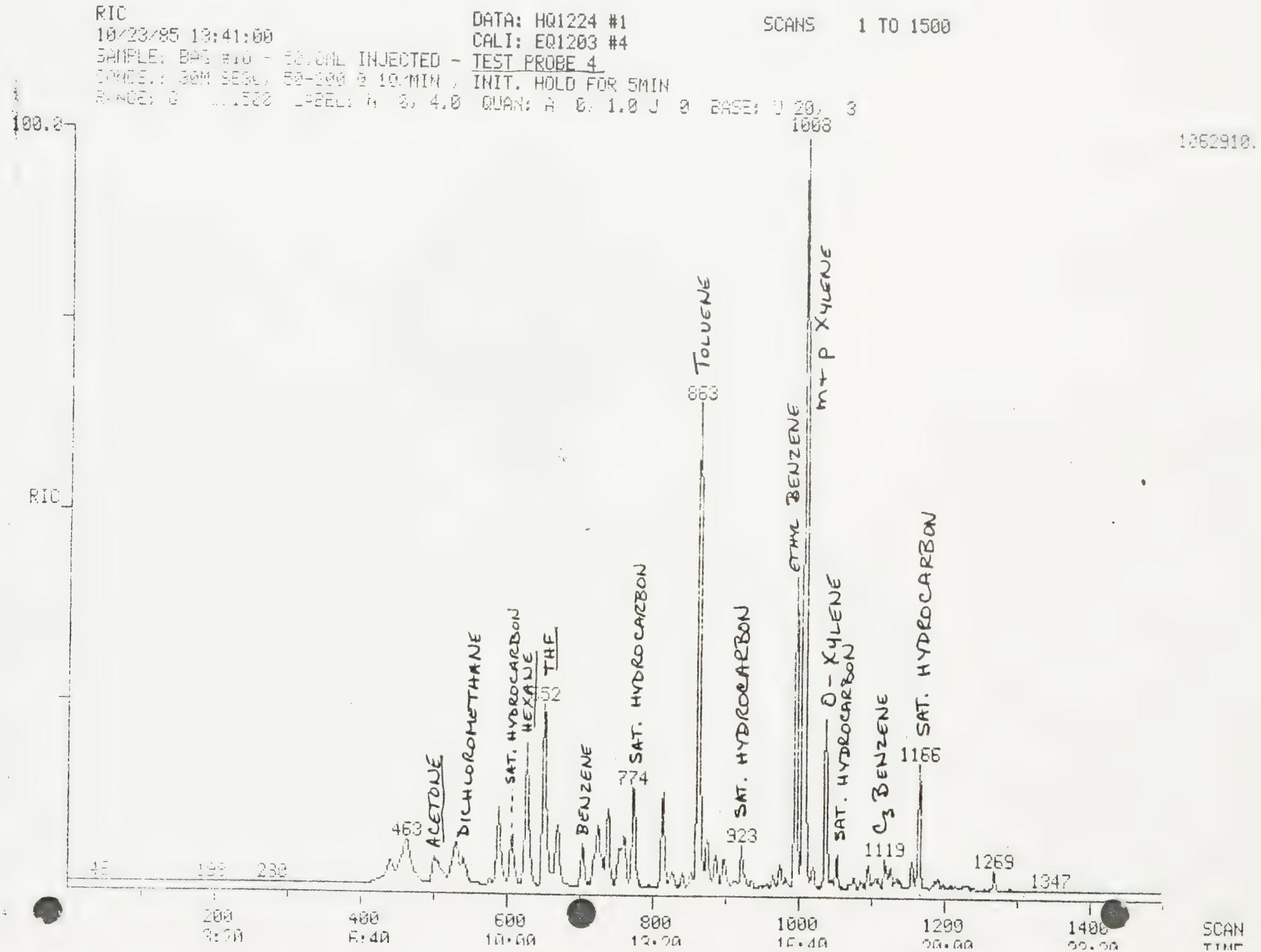
RIC
10/23/85 14:28:00
SAMPLE: EAC #15 - 50.0ML INJECTED -
CONDS.: 30M SE30,
RANGE: 0 1.1593 LABEL: N

DATA: HQ1225 #1
CALI: EQ1203 #4
TEST PROBE 1
INIT. OVEN 25° 5MIN

SCANS 1 TO 1500

ACETONE
DICHLOROMETHANE
DICHLOROETHENE
CHLOROFORM
THF
BENZENE
SAT. HYDROCARBON
SAT. HYDROCARBON
TOLUENE
ETHYL BENZENE
m+p - XYLENE
O- XYLENE
SAT. HYDROCARBON
C_3 BENZENE
C_3 BENZENE
SAT. HYDROCARBON

210534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DATA: HQ1224 #1
CALI: EQ1203 #4
SCANS 1 TO 1500
SAMPLE: BPS #10 - 50.0ML INJECTED - TEST PROBE 4
COLUMN: 30M SE30, 80-200 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: 0 ...320 LEVEL: A 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
100.0
1362910.
RIC
463
ACETONE
DICHLOROMETHANE
SAT. HYDROCARBON
HEXANE
552
THF
BENZENE
774
SAT. HYDROCARBON
863
TOLUENE
SAT. HYDROCARBON
1008
ETHYL BENZENE
M+P XYLENE
O-XYLENE
SAT. HYDROCARBON
C3 BENZENE
1119
1166
SAT. HYDROCARBON
1269
1347
45
199
230
200
3:20
400
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600
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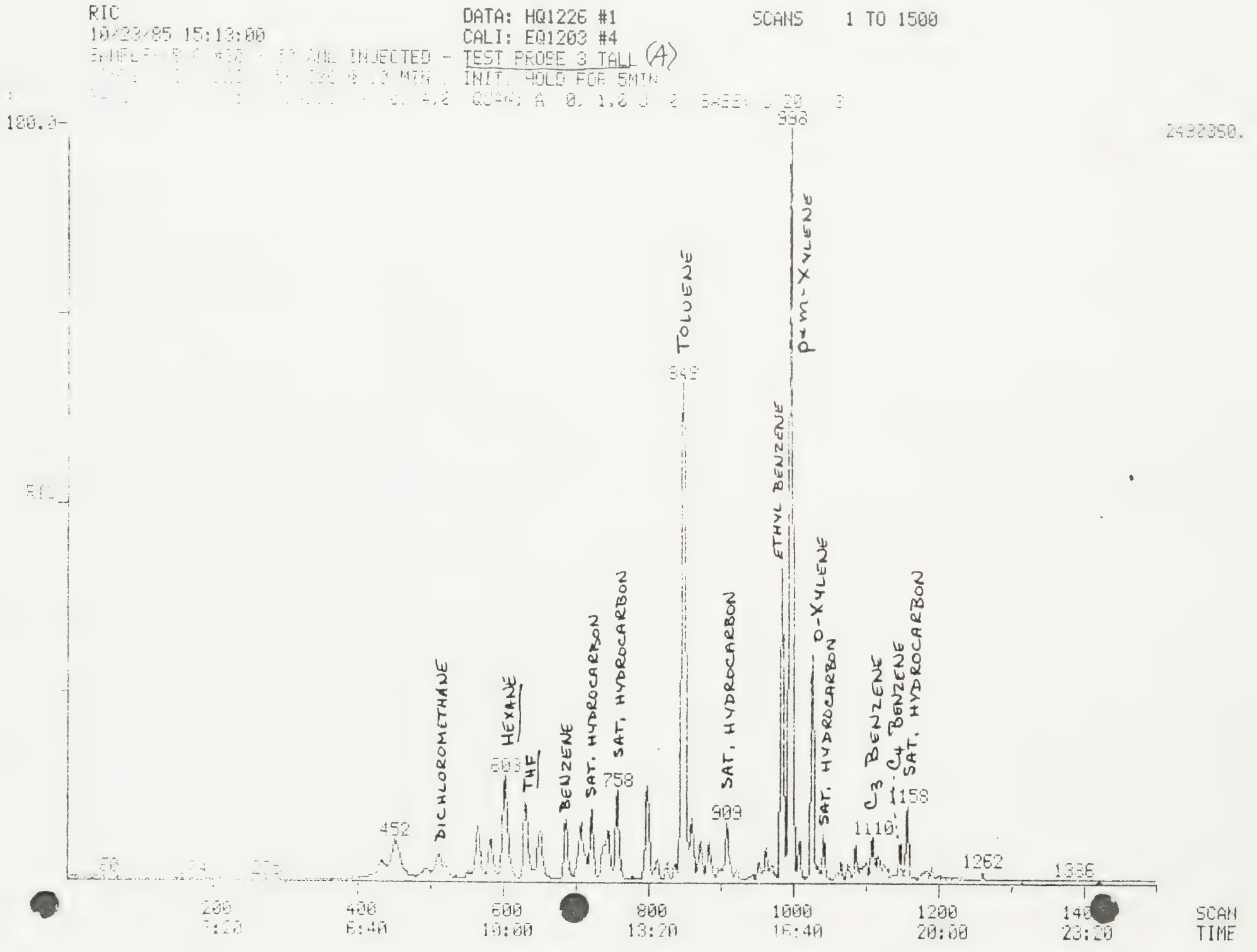
800
13:20
1000
16:40
1200
20:00
1400
SCAN
TIME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10/23/85 15:13:00
DATA: HQ1226 #1
CALI: EQ1203 #4
SCANS 1 TO 1500
TEST PROBE 3 TALL (A)
INIT. HOLD FOR 5MIN
100.0
50.
2492350.
936
DICHLOROMETHANE
452
HEXANE
603
THF
BENZENE
SAT. HYDROCARBON
758
SAT. HYDROCARBON
TOLUENE
SAT. HYDROCARBON
909
ETHYL BENZENE
p+m-XYLENE
O-XYLENE
SAT. HYDROCARBON
C3 BENZENE
1110
C4 BENZENE
SAT. HYDROCARBON
1262
1336
200
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600
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1000
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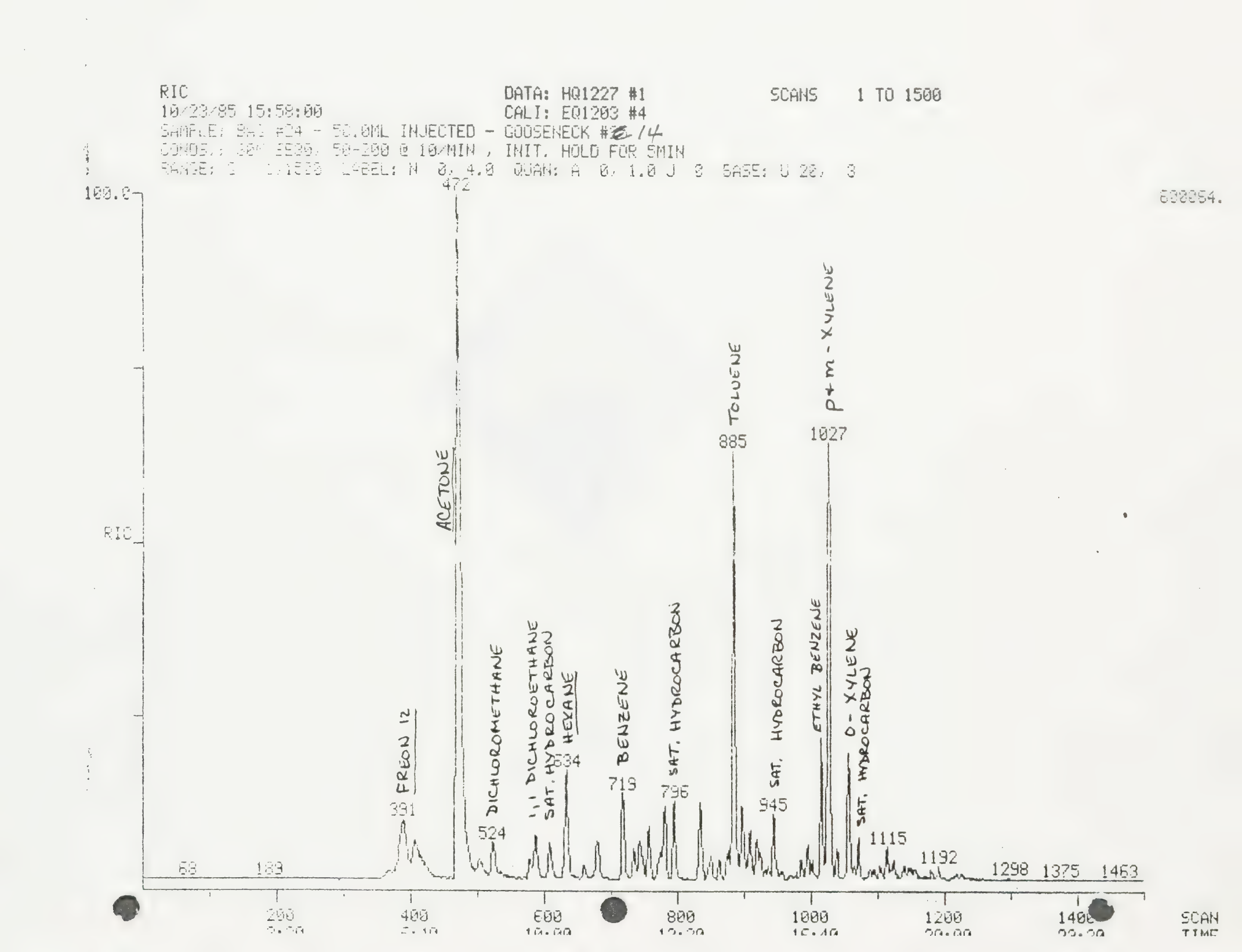
1200
20:00
1400
23:20
SCAN
TIME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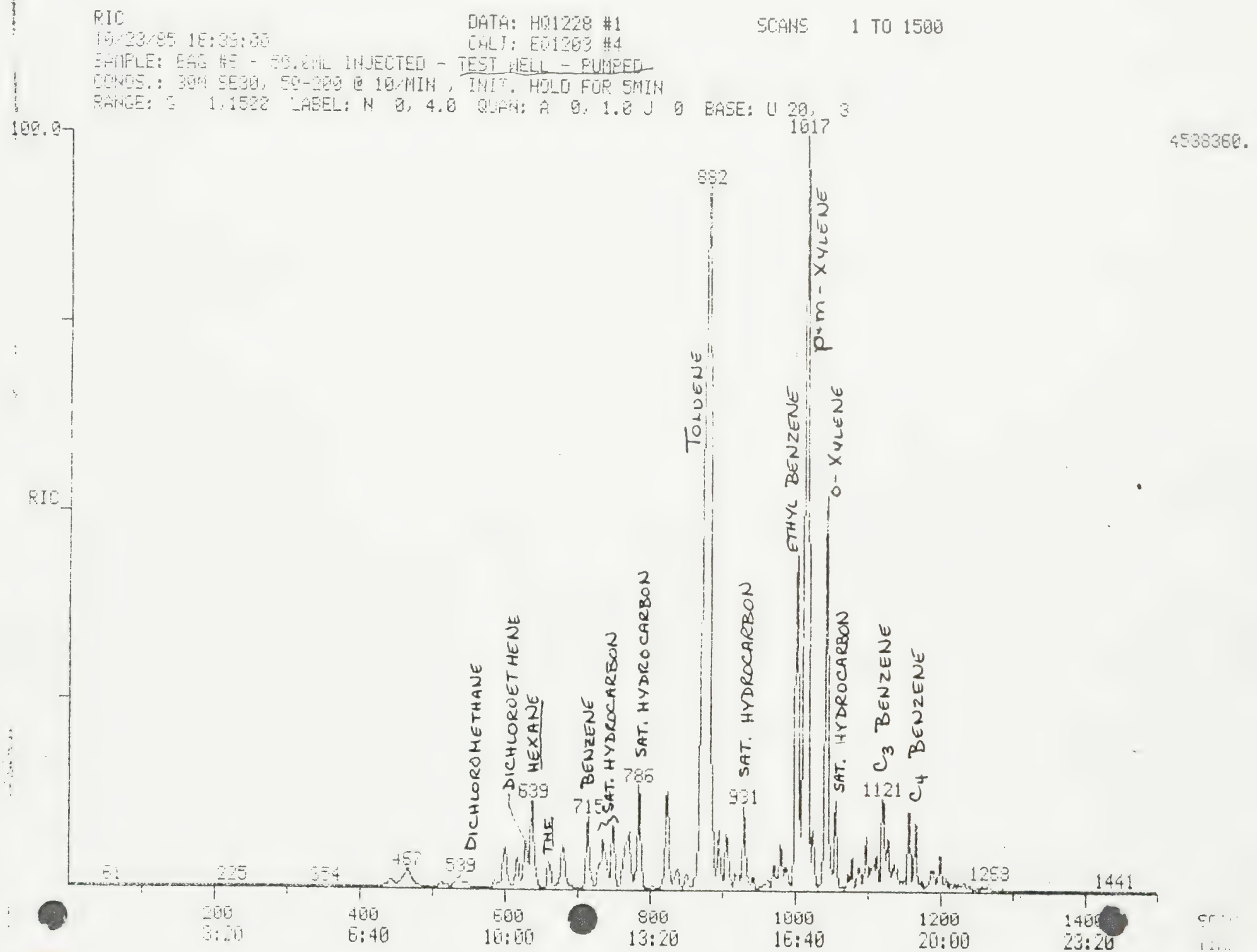
DATA: HQ1227 #1
CALI: EQ1203 #4
SCANS 1 TO 1500
SAMPLE: BAI #24 - 50.0ML INJECTED - GOOSENECK #2/4
CONDS.: 30M SE30, 50-200 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: C 1:1E08 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 0
100.0
RIC
472
ACETONE
391
FREON 12
524
DICHLOROMETHANE
634
1,1 DICHLOROETHANE
SAT. HYDROCARBON
HEXANE
719
BENZENE
796
SAT. HYDROCARBON
885
TOLUENE
945
SAT. HYDROCARBON
1027
P+M - XYLENE
ETHYL BENZENE
1115
O - XYLENE
SAT. HYDROCARBON
1192
1298
1375
1463
68
183
200
400
600
800
1000
1200
1400
SCAN
TIME


RIC
10/23/85 1E:35:00
DATA: HQ1228 #1
CALI: EQ1203 #4
SCANS 1 TO 1500
SAMPLE: BAG #E - 50.2ML INJECTED - TEST WELL - PUMPED
CONDS.: 30M SE30, 50-200 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: 5 1.1532 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
100.0
4538360.
RIC
DICHLOROMETHANE
DICHLOROETHENE
HEXANE
THF
BENZENE
SAT. HYDROCARBON
SAT. HYDROCARBON
TOLUENE
SAT. HYDROCARBON
ETHYL BENZENE
P+M-XYLENE
O-XYLENE
SAT. HYDROCARBON
C3 BENZENE
C4 BENZENE
51
225
354
457
539
639
715
786
882
931
1017
1121
1283
1441
200
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400
6:40
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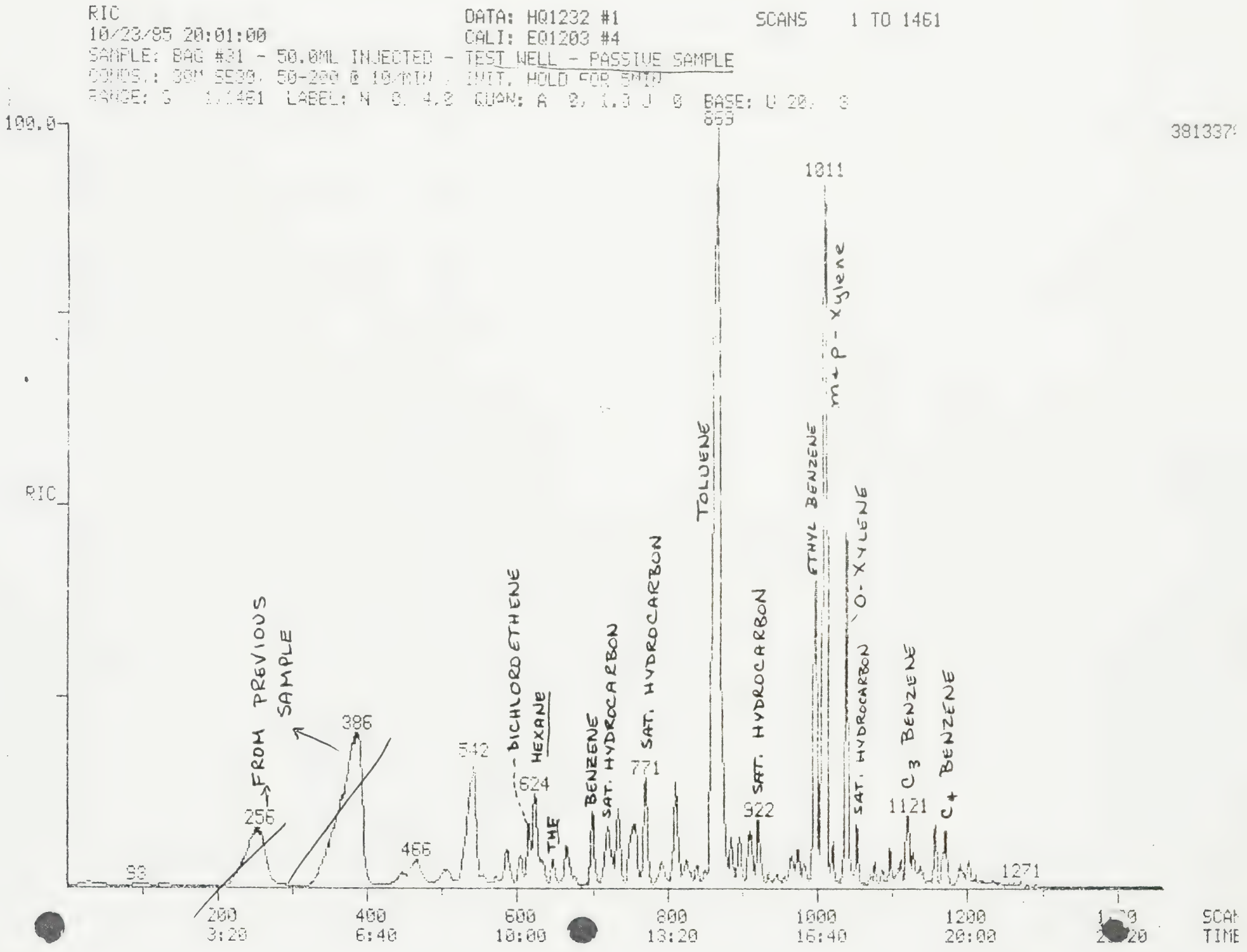
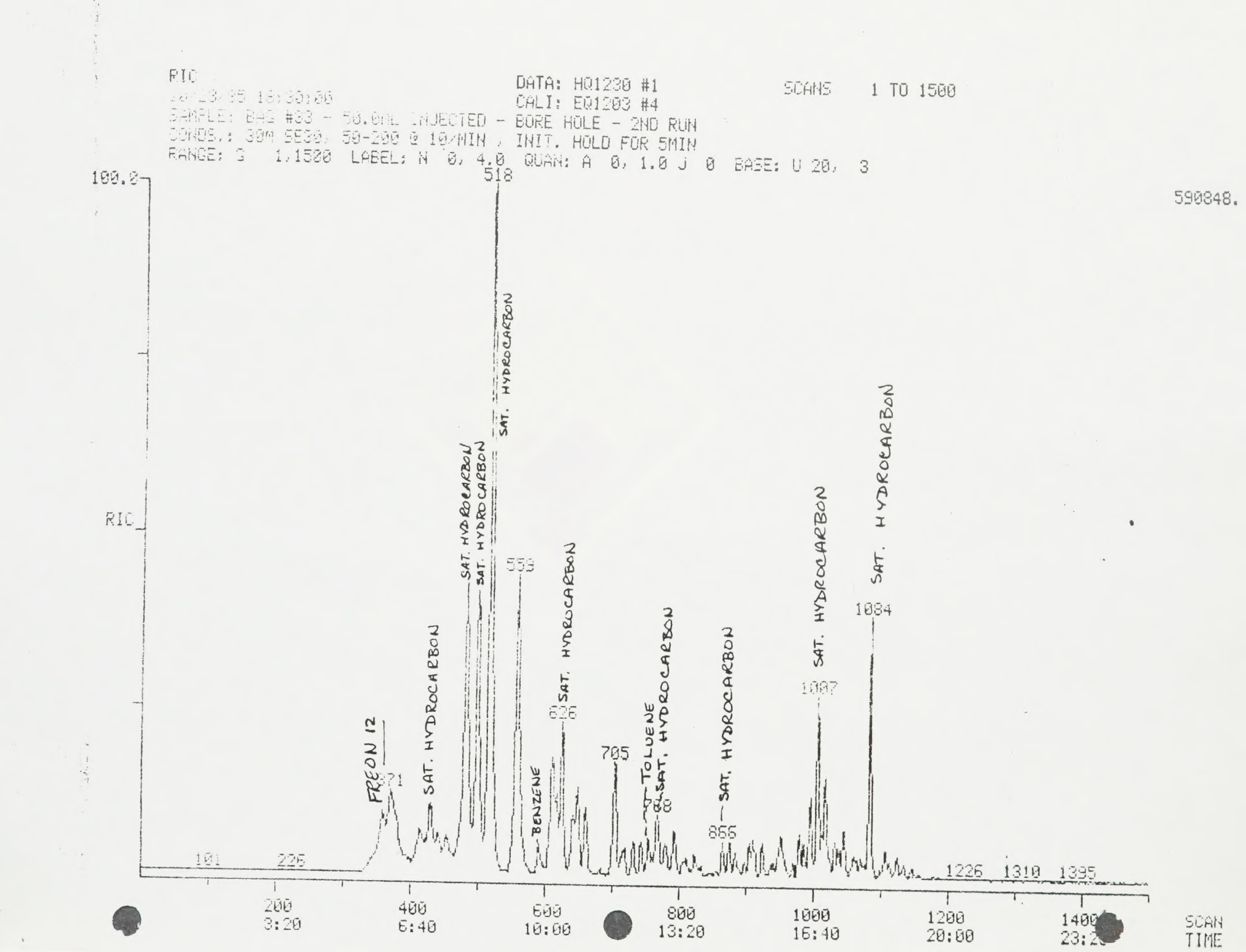

RIC
10/23/85 20:01:00
DATA: HQ1232 #1
CALI: EQ1203 #4
SCANS 1 TO 1461
SAMPLE: BAG #31 - 50.0ML INJECTED - TEST WELL - PASSIVE SAMPLE
CONDS.: 30M SE30, 50-200 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: G 1,1461 LABEL: N 0, 4.2 QUAN: A 0, 1.3 J 0 BASE: U 20, 3
100.0
RIC
3813379
859
1011
TOLUENE
m + p - Xylene
ETHYL BENZENE
O- XYLENE
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
C3 BENZENE
C4 BENZENE
1,1 - DICHLORDETHENE
HEXANE
BENZENE
THF
FROM PREVIOUS SAMPLE
386
542
624
771
922
1121
1271
256
466
93
200
3:20
400
6:40
600
10:00
800
13:20
1000
16:40
1200
20:00
SCAN
TIME


RIC
DATA: H01230 #1
CALI: E01203 #4
SCANS 1 TO 1500
SAMPLE: BAG #33 - 50.0ML INJECTED - BORE HOLE - 2ND RUN
CONDS.: 30M SE30; 50-200 @ 10/MIN , INIT. HOLD FOR 5MIN
RANGE: G 1,1500 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3
100.0
590848.
RIC
518
SAT. HYDROCARBON
SAT. HYDROCARBON
SAT. HYDROCARBON
556
BENZENE
826
SAT. HYDROCARBON
705
TOLUENE
& SAT. HYDROCARBON
865
SAT. HYDROCARBON
1007
SAT. HYDROCARBON
1084
SAT. HYDROCARBON
FREON 12
671
191
225
1226
1310
1395
200
3:20
400
6:40
600
10:00
800
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1000
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1200
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SCAN
TIME

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